

**Proposed Equivalent Safety findings to CS 25-1441(c)
(Crew Determination of Quantity of Oxygen in Passenger Oxygen System)**

Applicable to A350

Introductory note:

The following Equivalent Safety Finding has been classified as an important Equivalent Safety Finding and as such shall be subject to public consultation, in accordance with EASA Management Board decision 02/04 dated 30 March 2004, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

Statement of Issue

The A350 aircraft model passenger supplemental oxygen system will incorporate chemical oxygen or gaseous oxygen distributed systems throughout the cabin to protect the passengers from harmful effects of hypoxia. This distributed system will not incorporate a means to allow the crew to readily determine, during flight, the quantity of oxygen available in each oxygen supply source as requested per EASA Certification Specification 25.1441(c).

It appears that JAR 25.1441(c) had introduced at Change 13 an exception of indication for chemical generators, which was (inadvertently) removed at Change 16 during harmonization exercise with FAA CFR Part 25.

A350 – Equivalent Safety Finding to CS 25-1441(c) –

- Crew Determination of Quantity of Oxygen in Passenger Oxygen System -

Design Proposal:

The A350 aircraft model passenger distributed supplemental oxygen system features one-time used sealed bottles.

Justification:

It is recognised that the use of small sealed, one-time use gaseous bottles is very similar in concept to that of chemical oxygen generators, which also do not provide oxygen quantity information to the flight deck. The conditions to be met can therefore be compared to accepted practice on chemical oxygen generators and therefore be common for both types of oxygen supply sources.

Therefore, the system design can make the system equivalently safe to those systems that provide oxygen quantity information per CS 25.1441(c).

Safety Equivalency Demonstration:

Airbus has proposed to substantiate the use of oxygen supply source without means to inform crew of the quantity of oxygen available by considering it as equivalent to chemical oxygen generators to which supplemental requirements are added, as follows:

- a) A detailed description of the design details must be provided to describe the compensating features which provide an equivalent level of safety.
- b) The oxygen supply source is designed and tested to ensure that it will retain its required quantity of oxygen or chemicals throughout its expected life limit under foreseeable operating conditions.
- c) A means is provided for maintenance to readily determine when oxygen is no longer available in the supply source due to inadvertent activation.
- d) The life limit of the oxygen supply source is established by test and analysis
- e) Each oxygen supply source is labelled such that the expiration date can be easily determined by maintenance
- f) Airbus defines maintenance and inspection procedures in the maintenance planning documents to ensure that the oxygen supply source :
 - that are discharged are removed from the airplane,
 - are not installed on the airplane past their expiration date.
- g) Each oxygen supply source does not supply oxygen to more than six oxygen masks.